FluWatch

Public Health Agency of Canada | Agence de la santé publique du Canada

January 8 to 14, 2017 (Week 02)

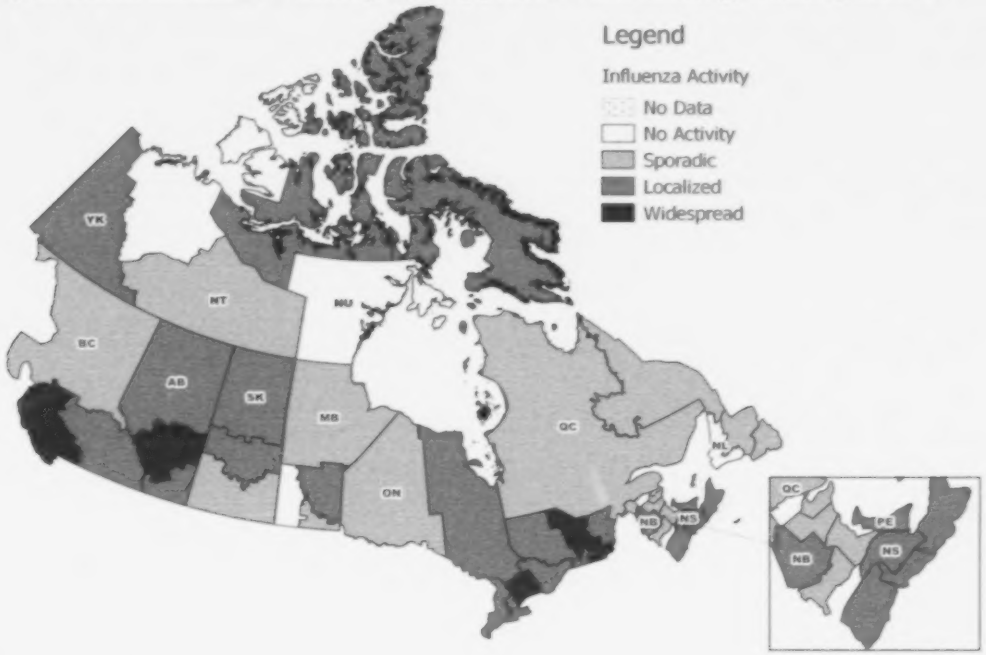
Overall Summary

- For the past two weeks, several indicators including laboratory detections, outbreaks and hospitalizations have been at their highest levels of the season.
- A total of 3,477 positive influenza detections were reported in week 02, an increase from the previous week.
- A(H3N2) continues to be the most common type of influenza affecting Canadians.
- The majority of cases, hospitalizations and deaths have been among adults aged 65+ years.
- One hundred and six confirmed influenza outbreaks were reported in week 02, with the majority occurring in long-term care facilities and due to influenza A.
- A total of 467 hospitalizations were reported by participating provinces and territories, up from 445 hospitalizations reported in the previous week.
- For more information on the flu, see our Flu(influenza) web page.

Influenza/Influenza-like Illness (ILI) Activity (geographic spread)

In week 02, all provinces and territories are reporting influenza or influenza-like illness activity. Sporadic influenza activity was reported in 16 regions across eight provinces and territories. NT and NL are the only provinces or territories that are not reporting any localized activity. Widespread activity was reported in four provinces (one region in ON, one region in QC, three regions in AB and three regions in BC). For more details on a specific region, click on the map.

Figure 1 – Map of overall influenza/ILI activity level by province and territory, Canada, Week 02

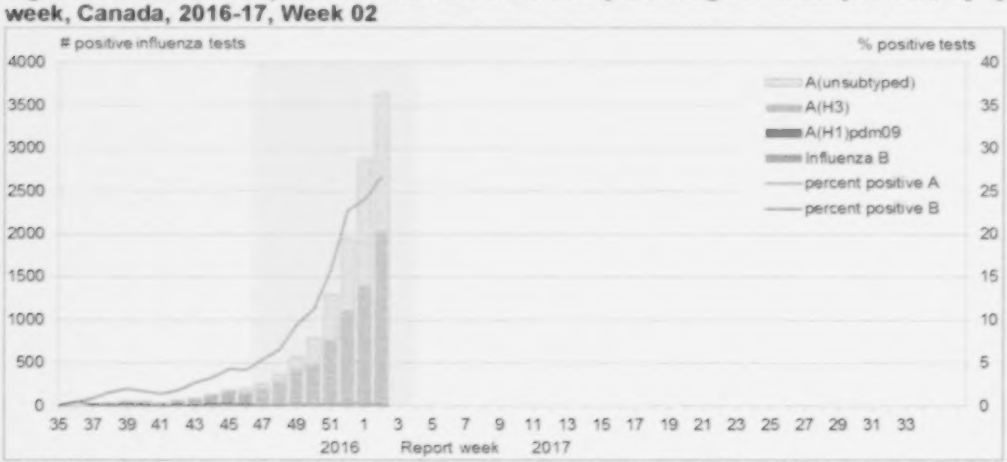


Note: Influenza/ILI activity levels, as represented on this map, are assigned and reported by Provincial and Territorial Ministries of Health, based on laboratory confirmations, sentinel ILI rates and reported outbreaks. Please refer to detailed definitions at the end of the report. Maps from previous weeks, including any retrospective updates, are available in the mapping feature found in the Weekly Influenza Reports.

Laboratory Confirmed Influenza Detections

The percentage of tests positive for influenza increased from 24% in week 01 to 27% in week 02. In 2014-15, the previous influenza A(H3N2)-predominant season, the peak occurred in week 52 with 34% of tests positive for influenza. This suggests Canada is nearing peak laboratory detections. For data on other respiratory virus detections, see the Respiratory Virus Detections in Canada Report on the Public Health Agency of Canada (PHAC) website.

Figure 2 – Number of positive influenza tests and percentage of tests positive, by type, subtype and report week, Canada, 2016-17, Week 02



The shaded area indicates weeks where the positivity rate was at least 5% and a minimum of 15 positive tests were observed, signalling the period of seasonal influenza activity.

Nationally in week 02, 3,477 positive influenza tests were reported, up from 2,727 tests reported in week 01. To date, a total of 12,516 laboratory confirmed influenza detections have been reported, of which 98% have been influenza A. Influenza A(H3N2) is the most common subtype detected, representing over 99% of subtyped influenza A detections (7194/7228). For more detailed weekly and cumulative influenza data, see the text descriptions for Figures 2 and 3 or the Respiratory Virus Detections in Canada Report.

Figure 3 – Cumulative numbers of positive influenza specimens by type/subtype and province/territory, Canada, 2016-17, Week 02

In week 02, adults aged 65+ accounted for approximately 60% of laboratory confirmed influenza cases with reported age. To date, among cases with reported age and type/subtype information (n= 8,856), adults aged 65+ accounted for almost half of the reported influenza cases and the largest proportion (43%) of influenza A (H3N2) cases.

Table 1 – Weekly and cumulative numbers of positive influenza specimens by type, subtype and age-group reported through case-based laboratory reporting[1], Canada, 2016-17, Week 02

Age groups (years)	Weeks (Jan. 8 to Jan. 14, 2017)					Cumulative (Aug. 28, 2016 to Jan. 14, 2017)						
	Influenza A				B	Influenza A				B	Influenza A and B	
	A Total	A(H1) pdm09	A(H3)	A (UnS)[3]	Total	A Total	A(H1) pdm09	A(H3)	A (UnS)[3]	Total	#	%
0-4	94	0	26	68	<5	>656	<5	311	345	39	>695	x%
5-19	79	0	23	56	<5	>854	<5	529	325	30	>884	x%
20-44	185	0	59	126	<5	1,399	6	815	578	28	1,427	16%
45-64	>217	<5	54	163	6	1,512	9	791	712	27	1,539	17%
65+	850	0	186	664	8	>4,263	<5	1,867	2,396	42	>4,305	x%
Total	>1,425	<5	348	1,077	20	8,690	21	4,313	4,356	166	8,856	100%
Percentage[2]	99%	0%	24%	76%	1%	98%	0%	50%	50%	2%		

[1]Table 1 includes specimens for which demographic information was reported. These represent a subset of all positive influenza cases reported. Cumulative data include updates to previous weeks.
[2]Percentage of tests positive for sub-types of influenza A are a percentage of all influenza A detections.
[3]UnS: unsubtyped: The specimen was typed as influenza A, but no result for subtyping was available.
x: Supressed to prevent residual disclosure
Specimens from NT, YT, and NU are sent to reference laboratories in the provinces

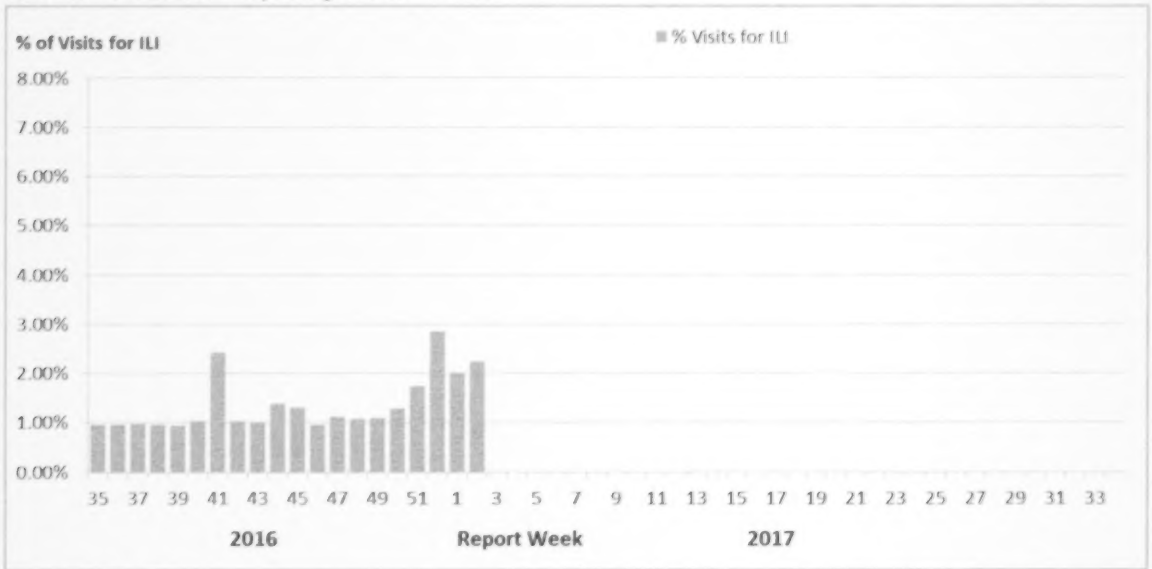
Syndromic/Influenza-like Illness Surveillance

Healthcare Professionals Sentinel Syndromic Surveillance

In week 02, 2.3% of visits to healthcare professionals were due to influenza-like illness.

Figure 4 – Percentage of visits for ILI reported by sentinels by report week, Canada, 2016-17

Number of Sentinels Reporting Week 02: 122



Delays in the reporting of data may cause data to change retrospectively. In BC, AB, and SK, data are compiled by a provincial sentinel surveillance program for reporting to FluWatch. Not all sentinel physicians report every week.

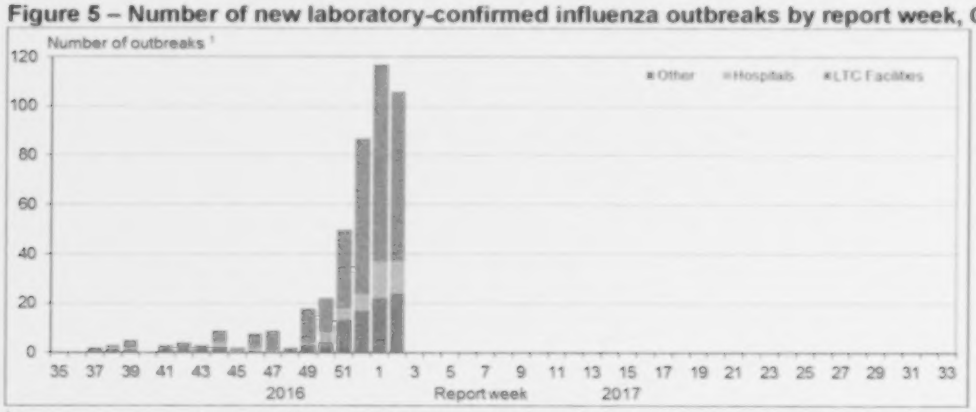
Are you a primary healthcare practitioner (General Practitioner, Nurse Practitioner or Registered Nurse) interested in becoming a FluWatch sentinel? Please visit our Influenza Sentinel page for more details.

Influenza Outbreak Surveillance

In week 02, 106 laboratory confirmed influenza outbreaks were reported: 69 in long-term care (LTC) facilities, 13 in hospitals and 24 in institutional or community (other) settings. Of the outbreaks with known strains or subtypes: 68 outbreaks were due to influenza A, of which 21 were due to influenza A(H3N2) (one in a hospital, 7 in LTC facilities and 13 in other settings), 47 were due to influenza A(UnS) (eight in hospitals, 29 in LTC facilities and 10 in other settings) and five outbreaks, all in LTC facilities, were due to influenza B. An additional influenza outbreak of influenza A(UnS) was reported in a school.

To date this season, 454 outbreaks have been reported and the majority (68%) have occurred in LTC facilities. In comparison at week 01 in the 2014-15 season, the previous influenza A(H3N2)-predominant season, 817 outbreaks were reported, of which 76% occurred in LTC facilities.

Figure 5 – Number of new laboratory-confirmed influenza outbreaks by report week, Canada, 2016-17, Week 02



[1]All provinces and territories except NU report influenza outbreaks in long-term care facilities. All provinces and territories with the exception of NU and QC report outbreaks in hospitals. Outbreaks of influenza or influenza-like-illness in other facilities are reported to FluWatch but reporting varies between jurisdictions.Outbreak definitions are included at the end of this report.

Provincial/Territorial Influenza Hospitalizations and Deaths

In week 02, 467 influenza-associated hospitalizations were reported by participating provinces and territories*. Influenza A accounted for all but one reported hospitalizations. A total of five intensive care unit (ICU) admissions and 13 deaths were reported in week 02. Adults aged 65+ accounted for the largest proportion of hospitalizations (74%). All ICU admissions and deaths in week 02 were reported in adults.

To date this season, 1,978 hospitalizations have been reported, of which 99% were due to influenza A. Among cases for which the subtype of influenza A was reported, almost all (1161/1164) were influenza A(H3N2). Adults 65+ accounted for 70% of the hospitalizations. Seventy-two ICU admissions and 49 deaths have been reported. The majority of deaths (82%) were reported in adults aged 65+ years.

Table 2 – Cumulative number of hospitalizations, ICU admissions and deaths by age and influenza type reported by participating provinces and territories, Canada, 2016-17, Week 02

Age Groups (years)	Cumulative (Aug. 28, 2016 to Jan. 14, 2017)						
	Hospitalizations			ICU Admissions		Deaths	
	Influenza A Total	Influenza B Total	Total [# (%)]	Influenza A and B Total	%	Influenza A and B Total	%
0-4	129	5	134 (7%)	6	8%	0	0%
5-19	79	<5	>79 (x%)	5	7%	<5	x%
20-44	115	<5	>115 (x%)	6	8%	0	0%
45-64	250	<5	>250 (x%)	21	29%	8	x%
65+	1,382	10	1,392 (70%)	34	47%	40	x%
Total	1,955	23	1,978 (100%)	72	99%	>48	100%

x: Supressed to prevent residual disclosure

*Note: Influenza-associated hospitalizations are not reported to PHAC by BC, NU, and QC. Only hospitalizations that require intensive medical care are reported by SK. ICU admissions are not distinguished among hospital admissions reported from ON. The hospitalization or death does not have to be attributable to influenza, a positive laboratory test is sufficient for reporting.

Sentinel Hospital Influenza Surveillance

Pediatric Influenza Hospitalizations and Deaths

In week 02, 30 laboratory-confirmed influenza-associated pediatric (≤16 years of age) hospitalizations were reported by the Immunization Monitoring Program Active (IMPACT) network. All but two cases were due to influenza A. The number of hospitalizations reported in week 02 is below the six year average for the same time period (Figure 7).

To date this season, 201 laboratory-confirmed influenza-associated pediatric hospitalizations were reported by the IMPACT network. Children aged 0-2 years accounted for approximately 41% of hospitalizations. Influenza A accounted for 93% (n=186) of the reported hospitalizations, of which 46% (n=86) were influenza A(H3N2) and the remainder were A(UnS). Additionally, 34 intensive care unit (ICU) admissions have been reported, of which the largest proportion (29%) was reported in children 10-16 years. A total of 19 ICU cases reported at least one underlying condition or comorbidity. No deaths have been reported this season.

In 2014-15, the previous influenza A(H3N2)-predominant season, there were 358 hospitalizations, 38 ICU admissions and no deaths reported as of week 01.

Figure 6 – Cumulative numbers of pediatric hospitalizations (≤16 years of age) with influenza by age-group reported by the IMPACT network, Canada, 2016-17, Week 02

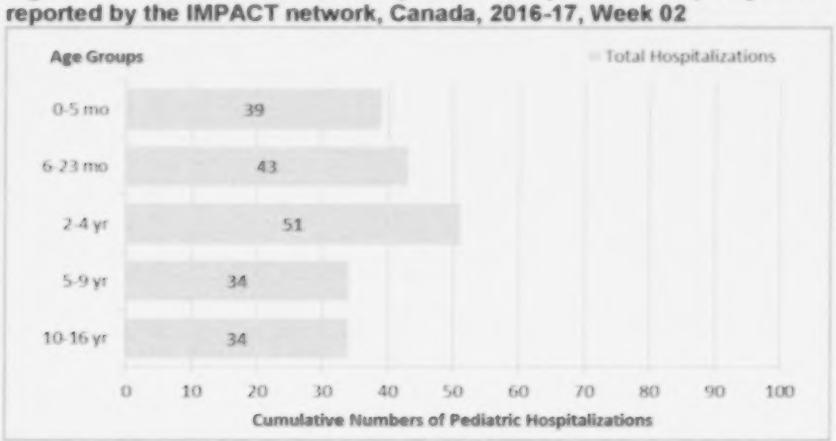
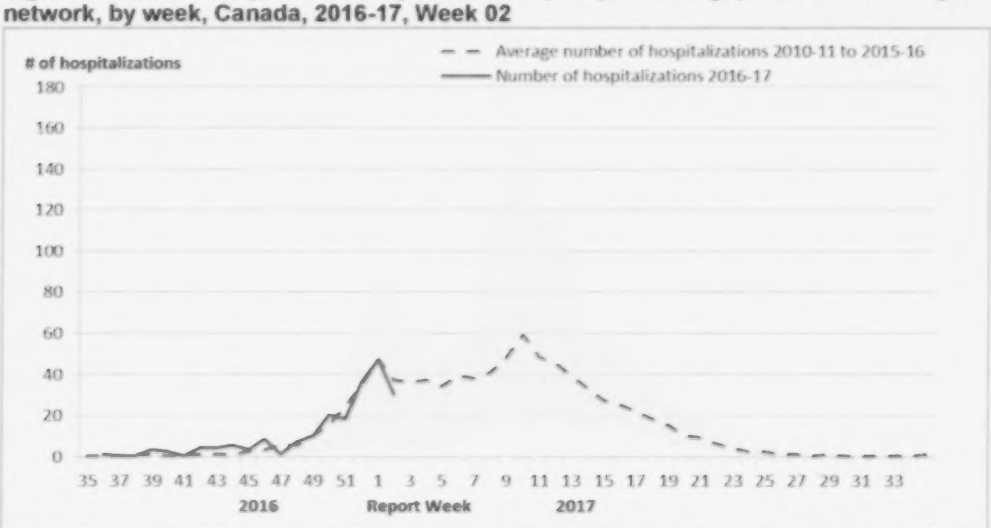


Figure 7 – Number of pediatric hospitalizations (≤16 years of age) with influenza reported by the IMPACT network, by week, Canada, 2016-17, Week 02



The shaded area represents the maximum and minimum number of cases reported by week from seasons 2010-11 to 2015-16

The number of hospitalizations reported through IMPACT represents a subset of all influenza-associated pediatric hospitalizations in Canada. Delays in the reporting of data may cause data to change retrospectively.

Adult Influenza Hospitalizations and Deaths

In week 02, a total of 136 laboratory-confirmed influenza-associated adult (≥20 years of age) hospitalizations were reported by the Canadian Immunization Research Network (CIRN). All but one case was due to influenza A and the greatest proportion of cases (84%) occurred in adults aged 65+.

To date this season, 510 laboratory-confirmed influenza-associated adult (≥20 years of age) hospitalizations have been reported by CIRN. All but four hospitalized cases were due to influenza A. Adults aged 65+ accounted for 78% of hospitalizations. To date, greater than 35 intensive care unit (ICU) admissions have been reported. A total of 23 ICU cases reported at least one underlying condition or comorbidity. A total of 11 deaths have been reported this season, all in adults aged 65+. The median age of reported deaths was 72 years.

Figure 8 - Cumulative numbers of adult hospitalizations (≥20 years of age) with influenza by type and age-group reported by CIRN, Canada, 2016-17, Week 02

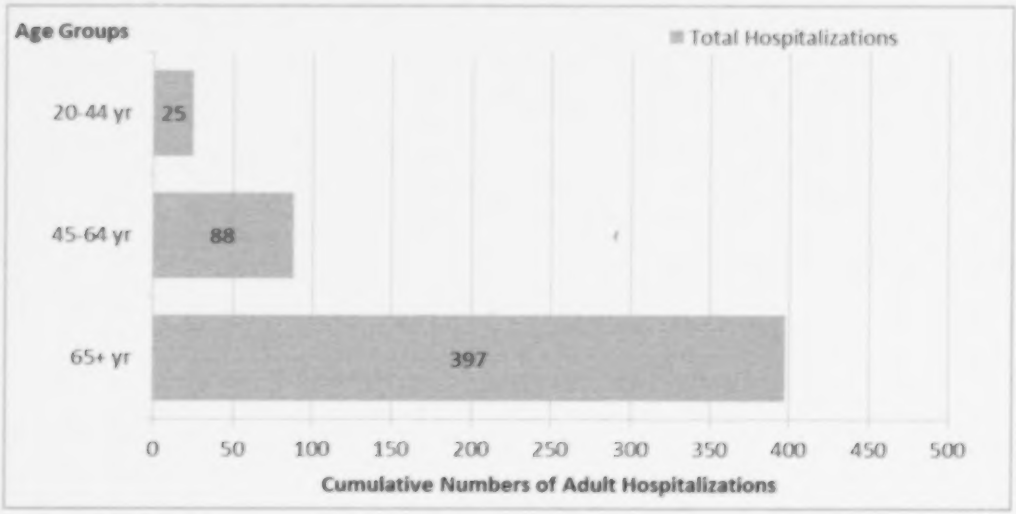
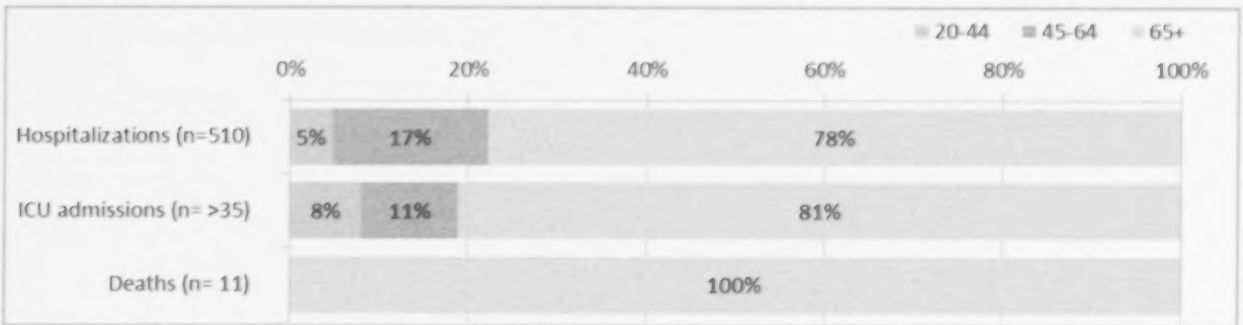


Figure 9 – Percentage of hospitalizations, ICU admissions and deaths with influenza reported by age-group (≥20 years of age) reported by CIRN, Canada 2016-17, Week 02



The number of hospitalizations reported through CIRN represents a subset of all influenza-associated adult hospitalizations in Canada. Delays in the reporting of data may cause data to change retrospectively.

Influenza Strain Characterizations

During the 2016-17 influenza season, the National Microbiology Laboratory (NML) has characterized 349 influenza viruses [314 A(H3N2), 10 A(H1N1), 25 influenza B]. All but one influenza A virus (n=323) and all (n=12) influenza B viruses characterized were antigentically or genetically similar to the vaccine strains included in both the trivalent and quadrivalent vaccines. Thirteen influenza B viruses were similar to the strain which is included only in the quadrivalent vaccine.

Table 3 – Influenza strain characterizations, Canada, 2016-17, Week 02

Strain Characterization Results[1]	Count	Description
Influenza A (H3N2)		
Antigenically A/Hong Kong/4801/2014-like	102	Viruses antigenically similar to A/Hong Kong/4801/2014, the A(H3N2) component of the 2016-17 Northern Hemisphere's trivalent and quadrivalent vaccine.
Genetically[2] A/Hong Kong/4801/2014-like	211	Viruses belonging to genetic group 3C.2a. A/Hong Kong/4801/2014-like virus belongs to genetic group 3C.2a and is the influenza A(H3N2) component of the 2016-17 Northern Hemisphere's trivalent and quadrivalent vaccine. Additionally, genetic characterization of the 102 influenza A (H3N2) viruses that underwent HI testing determined that 81 viruses belonged to genetic group 3C.2a and 21 viruses belonged to genetic group 3C.3a. The majority of viruses belonging to genetic group 3C.3a are inhibited by antisera raised against A/Hong Kong/4801/2014[3].
Antigenically A/Indiana/10/2011-like[4]	1	Viruses antigenically similar to A/Indiana/10/2011, a candidate H3N2v vaccine virus.
Influenza A (H1N1)		
A/California/7/2009-like	10	Viruses antigenically similar to A/California/7/2009, the A(H1N1) component of the 2016-17 Northern Hemisphere's trivalent and quadrivalent influenza vaccine.
Influenza B		
B/Brisbane/60/2008-like (Victoria lineage)	12	Viruses antigenically similar to B/Brisbane/60/2008, the influenza B component of the 2016-17 Northern Hemisphere's **trivalent** and **quadrivalent** influenza vaccine.
B/Phuket/3073/2013-like (Yamagata lineage)	13	Viruses antigenically similar to B/Phuket/3073/2013, the additional influenza B component of the 2016-17 Northern Hemisphere **quadrivalent** influenza vaccine.

[1] The NML receives a proportion of the influenza positive specimens from provincial laboratories for strain characterization and antiviral resistance testing. Strain characterization data reflect the results of hemagglutination inhibition (HI) testing compared to the reference influenza strains recommended by WHO.
[2] Determined by sequence analysis.
[3] WHO - Recommended composition of the influenza virus vaccines for use in the 2016-17 northern hemisphere influenza season.
[4] Detected in epidemiological week 50. For more details, see Week 50 report.

Antiviral Resistance

During the 2016-17 season, the National Microbiology Laboratory (NML) has tested 264 influenza viruses for resistance to oseltamivir and zanamivir and 120 influenza viruses for resistance to amantadine. All viruses were sensitive to oseltamivir and zanamivir. All 116 influenza A viruses were resistant to amantadine (Table 4).

Table 4 – Antiviral resistance by influenza virus type and subtype, Canada, 2016-17, Week 02

Virus type and subtype	Oseltamivir		Zanamivir		Amantadine	
	# tested	# resistant (%)	# tested	# resistant (%)	# tested	# resistant (%)
A (H3N2)	235	0 (0%)	235	0 (0%)	111	111 (100%)
A (H3N2v)	1	0 (0%)	1	0 (0%)	1	1 (100%)
A (H1N1)	9	0 (0%)	9	0 (0%)	8	8 (100%)
B	19	0 (0%)	19	0 (0%)	NA[1]	NA[1]
TOTAL	264	0 (0%)	264	0 (0%)	120	120 (100%)

[1]NA: Not Applicable

Provincial and International Influenza Reports

- World Health Organization influenza update
- World Health Organization FluNet
- WHO Influenza at the human-animal interface
- Centers for Disease Control and Prevention seasonal influenza report
- European Centre for Disease Prevention and Control - epidemiological data
- South Africa Influenza surveillance report
- New Zealand Public Health Surveillance
- Australia Influenza Report
- Pan-American Health Organization Influenza Situation Report
- Alberta Health – Influenza Surveillance Report
- BC - Centre for Disease Control (BCCDC) - Influenza Surveillance
- New Brunswick – Influenza Surveillance Reports
- Newfoundland and Labrador – Surveillance and Disease Reports
- Nova Scotia - Flu Information
- Public Health Ontario – Ontario Respiratory Pathogen Bulletin
- Quebec - Système de surveillance de la grippe
- Manitoba – Epidemiology and Surveillance – Influenza Reports
- Saskatchewan – influenza Reports
- PEI – Influenza Summary

FluWatch Definitions for the 2016-2017 Season

Abbreviations: Newfoundland/Labrador (NL), Prince Edward Island (PE), New Brunswick (NB), Nova Scotia (NS), Quebec (QC), Ontario (ON), Manitoba (MB), Saskatchewan (SK), Alberta (AB), British Columbia (BC), Yukon (YT), Northwest Territories (NT), Nunavut (NU).

Influenza-like-illness (ILI): Acute onset of respiratory illness with fever and cough and with one or more of the following - sore throat, arthralgia, myalgia, or prostration which is likely due to influenza. In children under 5, gastrointestinal symptoms may also be present. In patients under 5 or 65 and older, fever may not be prominent.

ILI/Influenza outbreaks

Schools: Greater than 10% absenteeism (or absenteeism that is higher (e.g. >5-10%) than expected level as determined by school or public health authority) which is likely due to ILI. Note: it is recommended that ILI school outbreaks be laboratory confirmed at the beginning of influenza season as it may be the first indication of community transmission in an area.
Hospitals and residential institutions: two or more cases of ILI within a seven-day period, including at least one laboratory confirmed case. Residential institutions include but not limited to long-term care facilities (LTCF) and prisons.
Workplace: Greater than 10% absenteeism on any day which is most likely due to ILI.
Other settings: two or more cases of ILI within a seven-day period, including at least one laboratory confirmed case, i.e. closed communities.
Note that reporting of outbreaks of influenza/ILI from different types of facilities differs between jurisdictions.

Influenza/ILI Activity Levels

1 = No activity: no laboratory-confirmed influenza detections in the reporting week, however, sporadically occurring ILI may be reported
2 = Sporadic: sporadically occurring ILI and lab confirmed influenza detection(s) with **no outbreaks** detected within the influenza surveillance region†
3 = Localized: (1) evidence of increased ILI* ;
(2) lab confirmed influenza detection(s);
(3) **outbreaks** in schools, hospitals, residential institutions and/or other types of facilities occurring in **less than 50% of the influenza surveillance region**†
4 = Widespread: (1) evidence of increased ILI*;
(2) lab confirmed influenza detection(s);
(3) **outbreaks** in schools, hospitals, residential institutions and/or other types of facilities occurring **in greater than or equal to 50% of the influenza surveillance region**†

Note: ILI data may be reported through sentinel physicians, emergency room visits or health line telephone calls.
** More than just sporadic as determined by the provincial/territorial epidemiologist.*
† Influenza surveillance regions within the province or territory as defined by the provincial/territorial epidemiologist.

We would like to thank all the Fluwatch surveillance partners who are participating in this year's influenza surveillance program.
This report is available on the Government of Canada Influenza webpage. Ce rapport est disponible dans les deux langues officielles.